



# REAL TIME CLOCK IC

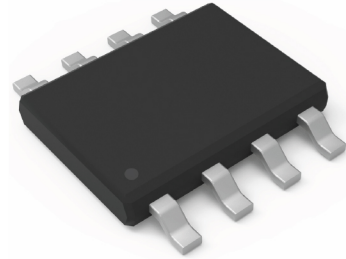
## REAL TIME CLOCK IC (External Crystal Oscillator)

High-precision

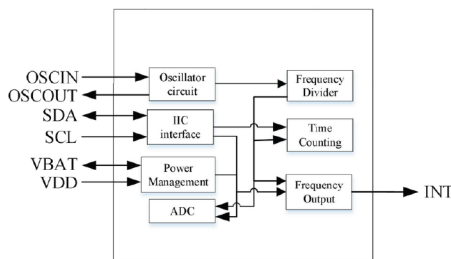


### ST8939

- Low power consumption: 0.6μA typical (Ta=25°C).
- Operating voltage: 1.8V~5.5V; Timekeeping voltage: 1.5~5.5V.
- Operating temperature: -40°C~+105°C.
- Accuracy at room temperature is  $\pm 5$ ppm.
- Standard IIC bus interface mode, maximum speed 400kHz.
- Chip pin ESD>4KV
- Pass 4 kV EFT Interference Test
- CMOS Process
- Package Form:SOP8(150mil)&MSOP8.



#### Block diagram

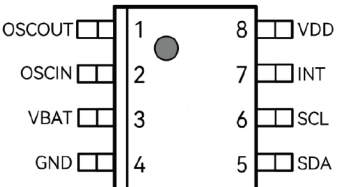


#### Overview

- Built-in 1/1024 second register
- Built-in IIC bus 0.5 seconds auto reset function
- Built-in temperature register
- Built-in Communication Verification Function
- Built-in 70-Byte General-Purpose SRAM Registers
- Built-in clock data write-protection function
- Built-in 8-Byte ID

#### Pin Function

Name	function	Features
OSCOUT	Output of crystal oscillator	0~1.5V Output
OSCIN	Input of crystal oscillator	0~1.5V Input
VBAT	Backup battery input pin, built-in voltage regulator and charging current selectable charging circuit.	1.5V to 5.5V, should be connected to GND when not in use
GND	Negative power (GND)	
SDA	Serial data input/output pin, this pin is usually pulled up to VDD with a resistor, and connected to other devices with open drain or open collector outputs via wire-AND logic.	N-Channel Open Drain Output/CMOS Input
SCL	Serial Clock Input pin. Since the signal is processed on the rising/falling edge of the SCL, special attention should be paid to the rising/falling rise/lowering time of the SCL signal, and the instructions should be strictly adhered to. In order to reduce the SCL rising edge time, the port where the MCU is connected to SCL can be set to CMOS output, do not set it to open-drain output.	CMOS input
INT	Alarm interrupt output pin	N-Channel Open Drain Output
VDD	Positive power pin	2.5V~5.5V



#### Terminal connection

#### DC Characteristics

Symbol	Parameters	Condition	Min	Typical	Max	Unit
VDD	Main power supply		1.8		5.5	V
VDDP	Timing voltage		1.5		5.5	V
VBAT	Standby battery supply voltage		1.5		5.5	V
I001	Main supply current	VDD=5V VDD=3V		0.6	1.2	μA
I002	The supply current when the IIC communicates	VDD=5V		40	120	μA
I003	Power supply current when charging is enabled	VDD=5V		80		μA
I007	Spare battery supply current	VDD=3.3V		0.6		μA
IL1	The input leakage current of SCL			100		nA
IL0	The input/output leakage current of the SDA			100		nA
VDDHYS	Hysteresis voltage for switching between VBAT and VDD			85		mV
VSW	Voltage to switch between VBAT and VDD	Ta=25°C		2.4		V
VOL	INT/SDA Low Output Voltage	VDD=5V IOL=0.5mA	0.1	0.2	0.3	V
VDR	VDD rise rate on power reset		0.1		1	V/ms